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e) in response to the relative timings of said marker of c) and said second marker, delaying the least delayed of said delayed audio and said delayed video.

33. (Amended) A method as claimed in claim 28 or 29 wherein as part of step b) said marker is combined in the active portion of said video as a watermark.

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### REMARKS/ARGUMENTS

Applicant includes herewith PTO form SB/22 Petition for Extension of Time Under 37 CFR 1.136(a) for reply to the Office Action mailed June 5, 2003.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made." These changes include amending steps c and d of claims 2 and 8 as required by the examiner.

Applicant wishes to thank examiner Lee for the thoughtful and detailed office action of June 5, 2003. The clarity of the reasoning for the rejections has greatly assisted applicant in preparing this response.

The examiner objected to claim 33 as being a duplicate of claim 31. Applicant has amended Claim 33 to call for the marker to be combined in the active portion of the video as a watermark.

The examiner has objected to claim 23 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement for the use of amplitude modulation. Reconsideration of this rejection is respectfully requested. On page 11, and in particular lines 1-11 of the instant specification refer the person of ordinary skill in the art to the parent specification (S/N 09/119,524, now patent 6,351,281) for teachings of element 10 of that application which element 10 can be used for element 4 of the instant specification. The parent specification states with respect to the operation of combiner 10 which serves to associate the tracker pulse from the tracker pulse generator 20 with an input signal 11 (column 3, lines 51-52 of 6,351,281). The parent

specification further teaches "the tracker pulse could be an amplitude modulated pulse engrafted onto the luminous portion of the signal" (column 4, lines 13-15 of 6,351,281). Many other teachings of operation of element 10, and by incorporation element 4 of the present specification, are included. It is believed that the present specification, which incorporates the parent specification by reference, adequately describes and teaches the feature of amplitude modulation recited in claim 23.

Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by Shuhart, Jr. et al. (5,065,251). Applicant respectfully requests reconsideration of this rejection as Shuhart does not show marking said first signal "to facilitate later determination of the timing of said first signal relative to said second signal". Furthermore, while figure 1 of Shuhart shows a video character generator 76 which is responsive (via 60) to the audio signal (from 50) conveying the whistle blow of the official, it is noted that the video which is modified is that which is sent to the replay display (figure 2). Consequently while there is marking of the video at the video output from 76, Shuhart's "marker" is not "carried with said first signal during the processing which said first signal is to experience." In other words, the simple replay display of Shuhart's video on the replay display does not process the combined video and marker such that there would be a delay of the video (or the audio) which would cause any timing change or error. Shuhart's invention is merely one which marks the video with the occurrence of an audible event, but does not provide for or suggest the subsequent use of that marking to "facilitate later determination of the timing" of the audio and video as called for in claim 1.

Claims 1-4, 16-21, 26, 28 and 29 were rejected under 35 U.S.C. 102(b) as being anticipated by Cooper (4,703,355). Cooper Figure 2 shows a prior art system wherein audio is compressed and inserted in the blanking interval of the video signal (column 5, lines 11-18). This system has problems because there is a limited amount of information carrying capability in the video signal due to its limited blanking interval (col. 5, lines 32-41). The invention of Cooper overcomes this problem by placing a timing signal in the blanking interval (col. 8, lines 26-30, col. 11, lines 19-23, col. 11, line 39 - col. 12, line 13, esp. col. 12, lines 10-12). Cooper teaches placing timing

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signals in the blanking interval of an analog video signal, however it does not teach placing timing signals in the active video, that is in the image itself. Consequently, the marker of Cooper will often be lost in the subsequent processing as the blanking portions will be discarded or separated from the image portion of the video signal. Elements of the above rejected claims which recite the marking being carried with the video signal during processing are believed to distinguish over Cooper.

In order to make verbose what is already claimed in the above rejected claims, amendments have been made. Claim 1 has been amended to specify that the first signal carries an image signal and the marker is carried with the image. By contrast Cooper teaches carrying the marker outside of the image portion (i.e. in blanking) of the video signal where it will be lost if the blanking portion is removed.

Claim 2 has been amended to make clear that the marker is carried with the image of the video type signal. In Cooper the timing information is carried in the non-image (or blanking) areas.

Claim 3 has been amended to make clear that the marking is in non-timing portions of the first signal. In Cooper the timing information is carried in the timing (blanking) areas.

With respect to claim 4, it is noted that the processing of the preceding claims removes horizontal and vertical blanking portions. In Cooper this processing would remove the timing signal, and thus prohibit operation. It is noted that the examiner misapprehends the operation of the sync stripper and clock generator of Cooper. The sync stripper merely operates to recover the sync from the video signal (105 of Figure 8), but does not remove the horizontal and vertical blanking portions of the video signal 86 which the binary audio is added (in the blanking) to by 90.

Claims 16-18 (and dependent claims 19-21 and 26) have been amended to make clear that associating the marker is with respect to the image of the video like signal.

Claims 28 and 29 have been amended to make clear that the marker is carried with the image portion of the video as part of transmitting or storing. In Cooper the timing signal is carried with the non-image (blanking) portion of the video signal.

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Claims 5-15, 24-25, 27, 32 and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (4,703,355) in view of Conover et al. (6,373,960). It is believed that the amendments pointed to above which make explicit the limitations of the claims as filed make these rejections moot.

Conover et al. did not issue until April 16, 2002, after the 04/07/00 filing date of the instant application and well after the 12/07/95 priority date of the earliest parent application. The examiner uses Conover in the combination for the teaching of video signals transmitted in MPEG format. The December 7, 1995 application recites "Furthermore, individual types of delay tracker combiners can be designed for each type of video signal which is being used, for example analog or digital (as appropriate) versions of NTSC, PAL, component, composite, serial, parallel, time sequential, MPEG, JPEG, audio, time code, etc. since in many systems multiple forms of signals are used and transcoded from one form to another" (page 4, second paragraph). The use of delay trackers with MPEG compressed video is thus taught in the December 1995 application, prior to the January 1998 filing date of Conover et al. Accordingly it is believed Conover et al. too late to use in combination to render obvious the claims as the examiner recites.

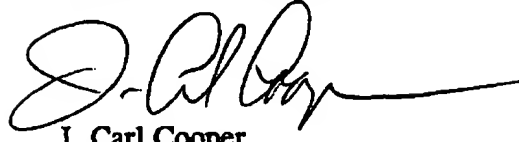
Claims 22, 23, 30, 31 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (4,703,355) in view of Janko et al. (5,818,520). It is believed that the amendments pointed to above make these rejections moot. Janko is used for its teaching of amplitude modulation for engrafting markers onto the luminous portion of the active portion of the video signal so as to survive the video compression process.

The December 7, 1995 application from which the instant application receives priority recites "In the present invention it is desired to add the DELAY TRACKER in the start of active video immediately after the horizontal sync occurring ..." (page 4, paragraph 4). Janko et al. was not filed until February 12, 1996 and did not issue until October 6, 1998. Accordingly it is believed Janko et al. is too late to use in combination to render obvious the claims which the examiner rejects.

In that the application is believed in form for allowance, further action in that respect is respectfully solicited.

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Respectfully Submitted,

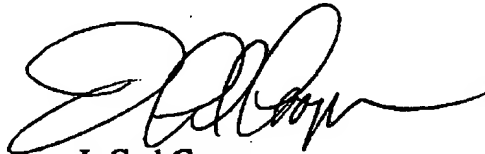


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I hereby certify that this correspondence is being facsimile transmitted to the U.S.  
Patent and Trademark Office, Fax No. (703) 872,9314 on December 29, 2003.



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**VERSION WITH MARKING TO SHOW CHANGES MADE****In the Claims:**

1. (Amended) In a system having a first signal which ~~may be~~ is a video type signal which carries an image and at least one second signal which may be an audio type signal the method of marking said first signal to facilitate later determination of the timing of said first signal relative to said second signal, said method including the steps of;

marking said first signal with a marker carried as part of said image in response to the occurrence of a particular event in said second signal said marking being such that said marker is carried with said first signal during the processing which said first signal is to experience.

2. (Amended) The method of determination of the timing of a first video type signal relative to its associated audio type signal after said audio type and video type signals have been processed, said method including the steps of:

- a) identifying the occurrence of a particular event in said audio type signal;
- b) in response to said occurrence of a), marking the image of said video type signal with a marker such that said marking is carried with said video type signal for said processing which said video type signal is to experience;
- c) ~~after said audio type signal processing,~~ identifying the occurrence of the same said particular event of a) in the processed version of said audio type signal ~~is again identified;~~
- d) ~~after said video type signal processing~~ detecting said marking of said video type signal of step b) ~~is detected~~ in the processed version of said video type signal;
- e) comparing the time at which said particular event is again identified in step c) to the time of said marking of said processed version of said video type

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signal being detected of step d) to determine the relative timing therebetween.

3. (Amended) A relative delay measurement system for measuring the relative delay between a plurality of signals which experience unequal delays due to processing thereof, said plurality of signals including a first signal having timing and non-timing portions and a second signal, said system including:

- f) a marker generator responsive to said second signal to generate a marker upon the occurrence of particular characteristics of said second signal;
- g) a marker associator responsive to said marker of a) and said first signal for marking said non-timing portions of said first signal with said marker in a fashion such that said marker will be carried with said first signal but not adversely affected by said subsequent processing;
- h) a marker separator responsive to said first signal after said subsequent processing to detect the presence of said marker therein and in response thereto generate a first delayed marker;
- i) a marker generator, which may be the same marker generator as in a), responsive to said second signal after said subsequent processing to generate a second delayed marker;
- j) a relative timing comparison responsive to said first delayed marker and said second delayed marker to determine the relative timing therebetween.

8. (Amended) In a television system where a video signal and at least one audio signal are transmitted or stored in compressed form, the method of determination the timing of said video signal relative to said audio signal after ~~said audio signal and~~ said video and audio signals have been compressed and subsequently decompressed, said method including the steps of:

- a) identifying the occurrence of a particular event in said audio signal prior to compression;

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- b) in response to said occurrence of a), marking the image area of said video signal with a marker;
- c) ~~after said audio signal is decompressed,~~ identifying the occurrence of the same said particular event of a) ~~is again identified~~ in the decompressed version of said audio signal;
- d) ~~after said video signal is decompressed~~ detecting the presence of said marker in the decompressed version of said video signal;
- e) comparing the time at which said particular event is again identified in step c) to the time of detecting the presence of said marker of step d) to determine the relative timing therebetween.

Claim 16. (Amended) A method of determining the synchronization of a video like signal carrying an image and at least one corresponding ancillary signal, which signals may suffer differing relative delays to become delayed ancillary and delayed video like signals, said method including the steps of:

- a) developing a marker in response to said ancillary signal;
- b) associating said marker with said image of said video like signal;
- c) recovering said marker from said delayed video like signal;
- d) developing a second marker corresponding to said marker of c) from said delayed ancillary signal;
- e) determining said synchronization in response to comparison of the timing of said marker of c) relative to the timing of said second marker.

Claim 17. (Amended) A method of maintaining the synchronization of a video like signal carrying an image and at least one corresponding ancillary signal which may suffer differing relative delays due to processing thereof which results in delayed ancillary and delayed video like signals, said method including the steps of:

- a) developing a marker in response to said ancillary signal;
- b) associating said marker with said image of said video like signal;
- c) recovering said marker from said delayed video like signal;



d) developing a second marker corresponding to said marker of c) from said delayed ancillary signal;

e) in response to the timing of said marker of c) relative to the timing of said second marker, delaying the least delayed of said delayed ancillary and said delayed video like signals thereby correcting errors in said synchronization.

Claim 18. (Amended) A method of indicating the relative delay of a video like signal carrying an image and at least one corresponding ancillary signals which may suffer differing relative delays as a result of processing to become delayed ancillary and delayed video like signals, said method including the steps of:

- a) developing a marker in response to said ancillary signal;
- b) associating said marker with said image of said video like signal;
- c) recovering said marker in response to said delayed video like signal;
- d) developing a second marker corresponding to said marker of c) from said delayed ancillary signal;
- e) indicating said relative delay in response to comparison of the timing of said marker of c) relative to the timing of said second marker.

Claim 28. (Amended) A method of indicating the synchronization of the video and at least one corresponding audio portion of a television program, which video and audio may suffer differing relative delays due to transmitting or storing said television program, said method including the steps of:

- a) before said transmitting or storing, developing a digital marker signal in response to said audio;
- b) carrying said marker with the image portion of said video in said transmitting or storing;
- c) after said transmitting or storing, recovering said marker from the resulting delayed video;
- d) after said transmitting or storing, in response to the resulting delayed audio developing a second marker corresponding to said marker of c);

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e) indicating said synchronization in response to comparison of the relative timing of said marker of c) and said second marker.

Claim 29. (Amended) A method of maintaining the synchronization of the video and at least one corresponding audio portion of a transmitted or stored television program, which video and audio may suffer differing relative delays as part of said transmitting or storing, said method including the steps of:

- a) before said transmitting or storing, providing a marker in digital form in response to said audio;
- b) carrying said marker with the image portion of said video as part of said transmitting or storing;
- c) after said transmitting or storing, recovering said marker from the resulting delayed video;
- d) after said transmitting or storing, in response to the resulting delayed audio, developing a second marker corresponding to said marker of c);
- e) in response to the relative timings of said marker of c) and said second marker, delaying the least delayed of said delayed audio and said delayed video.

33. (Amended) A method as claimed in claim 28 or 29 wherein as part of step b) said marker is combined in the active portion of said video as a watermark.